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ABSTRACT OF THE DISCLOSURE

Methods for the high yield production of antibody Fv-containing polypeptides, especially Fab' and F(ab')₂ antibody fragments are provided. Expression of heavy and light chain Fv in a microbial secretory system is followed by recovery of Fv from the periplasm under conditions that maintain a cysteine residue as a free thiol. The free thiol is reacted with free thiol of an antibody fragment of the same or differing specificity, or with agents such as diagnostic labels or therapeutic moieties. The products offer advantages of homogeneity and purity not available through the use of known methods for preparing such derivatives.